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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,167	04/02/2001	Johannes-Jorg Rueger	10744/900	9010

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EXAMINER
DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/824,167	Applicant(s) RUEGER ET AL.
	Examiner Thomas M. Dougherty	Art Unit 2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 06/24/02 have been fully considered but they are not persuasive. The Applicants admit that their figure 1"shows a circuit according to the present invention, suitable for charging and discharging a piezoelectric element using the method according to the present invention". Reineke et al. ('230) show this exact figure, the components, how they are connected, even the numbering of the components and the letters indicating voltage across components are identical. There is not one difference between that prior art figure and the figure which the applicants admit is their invention. The Applicants contend that the Examiner should not consider the claim language as being indefinite because they claim for example in claim 1, only an arrangement and its function. Reineke et al. show this arrangement as admitted implicitly by the Applicants. As they show the exact same invention as that shown by Reineke et al., it logically follows that the arrangement and functionality are met by Reineke et al. If the claimed arrangement is intended to function differently, then note that it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham* 2 USPQ2e 1647 (1987). Regarding the disputation of the 35 USC § 112 rejections, these are maintained. Particularly in light of the Reineke et al. reference, why would one of ordinary skill in the art assume that the arrangement is different from Reineke's, particularly since the Applicants admit that their figure 1 is their intended invention, and,

not to belabor the point, but that that figure is identical in every aspect to Reineke et al's. In other words, *in arguendo,* if a routineer in the art could construct the invention given the claim language, and that construction is different than that of Reineke et al. then the Applicant has failed to provide a best mode. If not different than Reineke et al. then Reineke et al. is surely a valid reference. Regarding use of a square wave which the Applicants claim is novel and unobvious, note that Christensen (US 5,862,431) shows the interchangeability of different types of driving signals at col. 7, lines 7-9 and specifically notes the interchangeability of square and sine waves. Thus the Applicants' contention is not persuasive.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 and 19-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The independent claims note the invention in terms of function with no structure except an apparatus which performs the function. Thus it is very broad and nearly fails to provide enablement. Additionally, while the event and time characteristics are alluded to on page 25, there is no proper antecedent basis for the terms themselves found in the disclosure. At least claim 4 notes the threshold and gap, which terms are not clearly understood in the context of the claims.

Claim 18 does not provide metes or bounds. Use of a narrower range within a broader range in the same claim renders the claim indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection. One could not tell from such a claim if the narrower range or limitation is a restriction or limitation on the broader range or limitation. The term in question here is "preferably". The use of the term is not indefinite per se, but its use to link broad and narrow ranges or limitations renders the claim indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 and 8-17, 19-38 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Reineke et al. (EP 0 871 230). Note that this reference shows the exact same figures 1-10 and also note that the figures in the disclosure are noted as being those of the present invention. For example see the description of fig. 1 on p. 11, in which it is noted that the circuit is used "for charging and discharging a piezoelectric element using the method according to the present invention". Consequently the structure claims are met by this reference in so far as the claims are intended to refer to structures and operations shown in figures 1-10. Note that it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be

employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Reineke et al. show (fig. 1) an apparatus for charging or discharging a piezoelectric element (1), characterized in that a current is regulated as a function of a time characteristic (see fig. 6) and an event characteristic to achieve an effective low average current. The apparatus is for charging or discharging a piezoelectric element of a fuel injection system and the current is a current of the fuel injection system. The current is regulated by switching a charge or discharge switch (3, 5) as the function of the time characteristic and the event characteristic to achieve the effective low average current. When the current is at a low level below a predefined lower threshold, the charge switch remains open for a predefined time interval to allow the current to exhibit a gap. When the current is at a level below a predefined lower threshold, the charge switch remains open for a predefined time interval to allow the current to exhibit a gap. A charge switch (3) or a discharge switch (5) of the apparatus is switched from an OFF position to an ON position or from the ON position to the OFF position, respectively to allow or stop charging or discharging when an absolute value of the current is respectively equal to or greater than or less than the event characteristic which is a predefined limit threshold current. A charge or discharge switch (3, 5) of the apparatus is switched from the OFF position to the ON position to allow charging or discharging at a predefined time of the time characteristic after the absolute value of the current is equal to or less than the event characteristic which is a predefined lower limit threshold current. The charge or discharge switch (3, 5) is switched from the ON position to the

OFF position when the absolute value of the current is equal to or greater than the event characteristic which is a predefined limit threshold current. A desired average current is achieved by varying the time characteristic and the event characteristic. A time delay is predefined so that the charge or the discharge switch is switched to the ON position according to the predefined time delay, the predefined time delay being set to trigger when the absolute value of the current equals or is greater than a predefined current threshold.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reineke et al. (EP 0 871 230 A1). Given the invention of Reineke et al. as noted above, they do not disclose a square wave signal is used to switch a charge or discharge switch from an OFF position to an ON position to allow charging or discharging.

The shape of the signal is arbitrary however and is clearly equivalent to other types of signals that would perform the same function and which shape, is well within the skills of a routineer in the art to produce. Therefore the shape carries no patentable weight.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd

July 23, 2002

THOMAS M. DOUGHERTY
PRIMARY EXAMINER
GROUP 2100